REMARKS

The present invention is a fuel oil composition characterized by exhibiting good cold flow plugging point, lubricity, and effective control of particulate matter emissions, said fuel oil composition having a sulfur content of 0.05 wt% or less and comprising a base stock which has normal paraffin compounds having a carbon number of 20 or more at 4.0 wt% or less, a polynuclear aromatic compound content of 8.0 vol% or less, a ratio of [B/C] of from 0.04 to 0.40 wherein B is the content in wt% of normal paraffin compounds having a carbon number of (n+5), C is the content in wt% of normal paraffin compounds having a carbon number of (n), [B/C] is the average B/C ratio, n is a positive integer when total content of normal paraffin compounds having a carbon number of (n) or more is 3.0 wt% or less and closest thereto, based on the total normal paraffin compounds in the base stock, and containing 0.01 to 0.10 wt% of a flow improver and 0.002 to 0.1 wt% of a lubricity improver.

The Examiner objects to the specification pointing out informalities in the form of missing symbols (< or > or =) with respect to relationships 1, 2 and 3.

The text has been amended at pages 5, 6, 7 and 8 to insert the appropriate symbols at the necessary locations. These insertions are based on and supported by the priority document WO 01/00754 (PCT/JP99/03434) a copy of which is attached and do not constitute new matter.

The Examiner objects to claim 1 as being informal insofar as necessary symbols are missing with respect to relationship 1, 2 and 3.

Claim 1 has been amended to insert the required symbols at the appropriate locations. The amendment to claim 1 is also based on and supported by the priority document.

The Examiner rejects claim 1 under 35 USC § 102(a) as anticipated by or, in the alternative, under 35 USC § 103(a) as obvious over Nakajima et al (USP 6,136,050) and Nakajima et al (USP 6,136,049) considered separately.

The Examiner argues that '050 discloses a diesel fuel oil composition comprising a base fuel containing n-paraffin compounds having a carbon number of 20 or more at 4.0 wt% or less, having a specific carbon number distribution in the high-boiling normal paraffin compounds, containing sulfur at 0.05 wt% or less and being incorporated with 0.01 to 0.1 wt% of a flow improver and 0.002 to 0.1 wt% of a lubricity improver. '050 also teaches that good CFPP and lubricity can be secured when the base fluid satisfies the relationship $0 \leq A \leq 4.00$ wt% wherein A is the content of normal paraffin compounds having a carbon number of 20 or more, and $0.04 \leq [B/C] \leq 0.40$ wherein B is the content of normal paraffin compounds having a carbon number of n+5, c is the content of normal paraffin compounds having a carbon number of n, and [B/C] is average B/C ratio, and (n) is an integer when total content of normal paraffin compounds having a carbon number (n) or more account for 3.0 wt% of the total content of the normal paraffin compounds in the base fuel.

The Examiner concludes that '050 anticipates the fuel oil composition for diesel engines set forth in claim 1.

Despite this ascertation of anticipation the Examiner acknowledges that '050 does not address the parameter of D being $0 < D \leqq 8.0$ wherein D is the content in vol% of polynuclear aromatic hydrocarbon compounds but dismisses this arguing that it is not clear what relationship (3) represents and D may be present in negligible amount, very slightly greater than zero which is not seen to affect the fuel oil compositions and is not seen to be patentably significant.

The Examiner substantially repeats these argument when relying on Nakajima '049 the difference being that '049 discloses a diesel fuel oil composition specifically and only recites but does not claim that other additive such as a lubricity improver can be present.

Applicants respectfully traverse this rejection.

Nakajima '050 and '049 are both silent as to the polynuclear aromatic hydrocarbon compound content of the fuel. From this it could be concluded that the polynuclear aromatic hydrocarbon compound content of the fuel is irrelevant.

However, it has been found that this is not in fact the case.

Relationship 3 directed to $0 < D \leqq 8.0$ vol% of polynuclear aromatic hydrocarbon compounds indicates a limit on the amount of such polynuclear aromatic hydrocarbon compounds which may be present in the fuel for the fuel to achieve good CFPP and lubricity and effective control of particulate matter. Nakajima '049 and '050 are both silent as to control of particulate matter.

In the present application Comparative Examples 6 and 13 (Tables 6 and 7 respectively) demonstrate that for fuels I and S which contain 10.2 and 10.5 vol% polynuclear aromatic hydrocarbon compounds respectively, the fuels exhibited significantly higher particulate matter emissions as compared against fuels wherein the polynuclear aromatic hydrocarbon compound content was less than about 8 vol%, see Examples 4 and 9 (Tables 4 and 5 respectively) reporting the results for fuels D and N (7.8 and 7.5 vol% aromatic hydrocarbon compound content respectively).

As between Examples 4 and 9 versus Comparative Examples 6 and 13, only about a 3 vol% difference in polynuclear aromatic hydrocarbon compound content

produced more than a doubling of the particulate matter emissions (from about 0.11/0.12 to 0.25/0.28 g/km) (a more than 100% increase).

However, if one compared Examples 7 and 9 or Examples 3 and 4 which also had only about a 3 vol% difference in polynuclear aromatic hydrocarbon compound content the difference in particulate matter emissions in only about 50%. For Examples 3 and 4 the PM emissions went from 0.083 to 0.110 while for Examples 7 and 9 the PM emissions went from 0.085 to 0.12, for the same about 3 vol% increase in polynuclear aromatic hydrocarbon compound content.

Nothing in Nakajima '049 or '050 taught, suggested or implied the significance or importance of the polynuclear aromatic hydrocarbon compound content parameter in the fuel nor that at a content of greater than about 8 vol% the PM emissions would increase at a greater rate for each vol% change (increase) in polynuclear aromatic hydrocarbon compound content which is contrary to what one would more or less have expected based on the Examples wherein the polynuclear aromatic hydrocarbon compound contents were all less than 8 0 vol% (Examples 1-9).

It is this aspect of the present invention, the discovery and identification of a limit on the polynuclear aromatic hydrocarbon compound content in terms of effective control of particulate matter emissions, that renders the present invention novel and not obvious over the '049 and '050 references considered separately or even in combination.

It is requested that the Examiner reconsider this application in light of the amendments made to the specification and the claims, that she withdraw the rejections, allow the claims and pass the case to issue in due course.

Respectfully submitted,

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